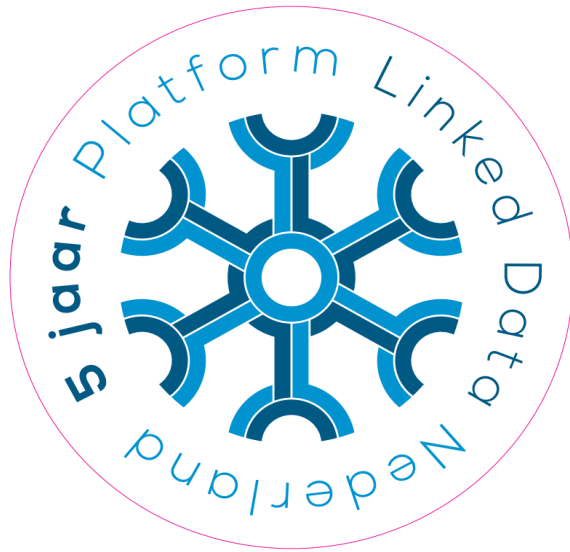




Platform Linked
Data Nederland



LINKED DATA INTRODUCTION

PIETER VAN EVERDINGEN
(PLDN/OPENINC)

20-6-2019

#linkeddatanl



Platform Linked
Data Nederland

Innovative Data Integration program

PLDN Introduction

Time	
12:00 - 12:30	Platform Linked Data Netherlands, Innovation via Meaningful Connections - Pieter van Everdingen (PLDN)

12:30 - 14:00 - Lunch

Innovative Data Integration Cases

14:00 - 14:30	Delivering Pro-active Healthcare Management with Semantics & Graphs - Paul Gunstone (Smartlogic)
14:30 - 15:00	Controlling The Build & Maintenance Chain with Connected Infrastructure Data - Wouter Engelen (Movares) (in Dutch)
15:00 - 15:30	Agile Data Modeling & Integration within a Wildlife Intelligence Platform - Jan Kees Schakel (Sensing Clues)



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Why linked data..., it starts with a desire

Most persons have the desire to:

- **Connect**
- **Collaborate**
- **Share**

**digitally &
socially**





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Current practices..., many barriers

But often suffer in real-life from:

- **Organizational**
- **Technical**
- **Legal**

barriers !!

**Which makes sharing information
and smart collaboration difficult**





Solution A..., traditional scenario's

Drawbacks:

- **Wide variety of data formats**
- **Many transfer protocols**
- **Rigid**
- **Expensive**
- **Many uncontrolled data copies**





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Solution B..., linked data scenario's

Benefits:

- **One data format (RDF)**
- **One protocol (HTTP)**
- **More flexible**
- **More cost-efficient**
- **No unnecessary data copies**

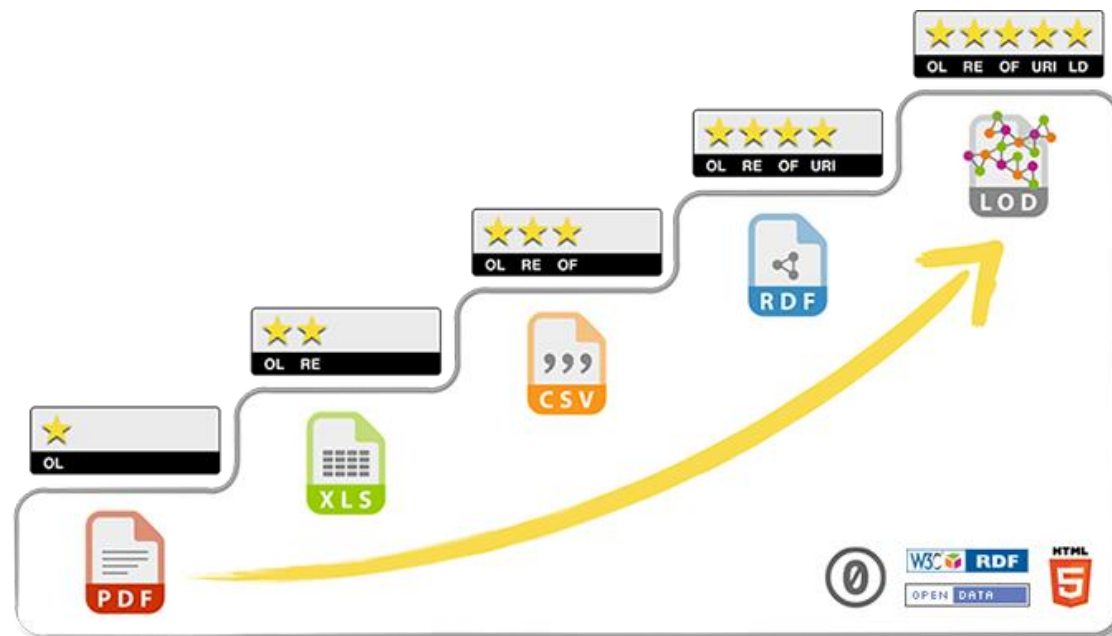
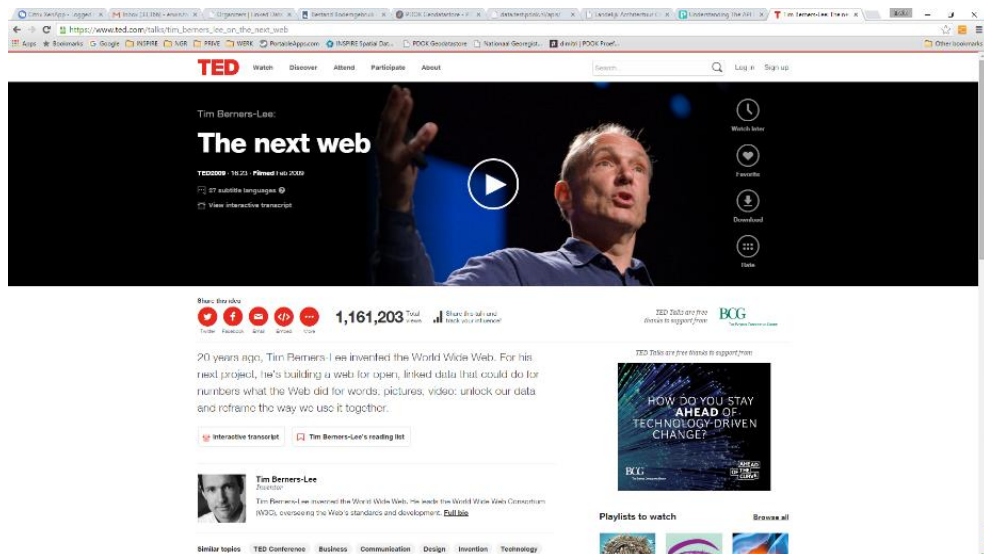




Platform Linked
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Linked Data..., web of data

Linked Data: A way for publishing data on the web (with focus upon open web standards and re-usability). Data is stored as triples (based upon the RDF standard) and is query-able via the SPARQL standard, which supports federated queries upon different data sources in *one* query





Linked Data..., basic elements

1. RDF (Resource Description Framework)

Data model

- **Triples** (Subject-Predicate-Object)

Assertions about data-elements in sentences

- **URI's** (Unique Resource Identifiers)

Unique internet address of a data-element!!

- **Vocabulaires** (re-usable glossaries & models)

Re-usable modeling elements

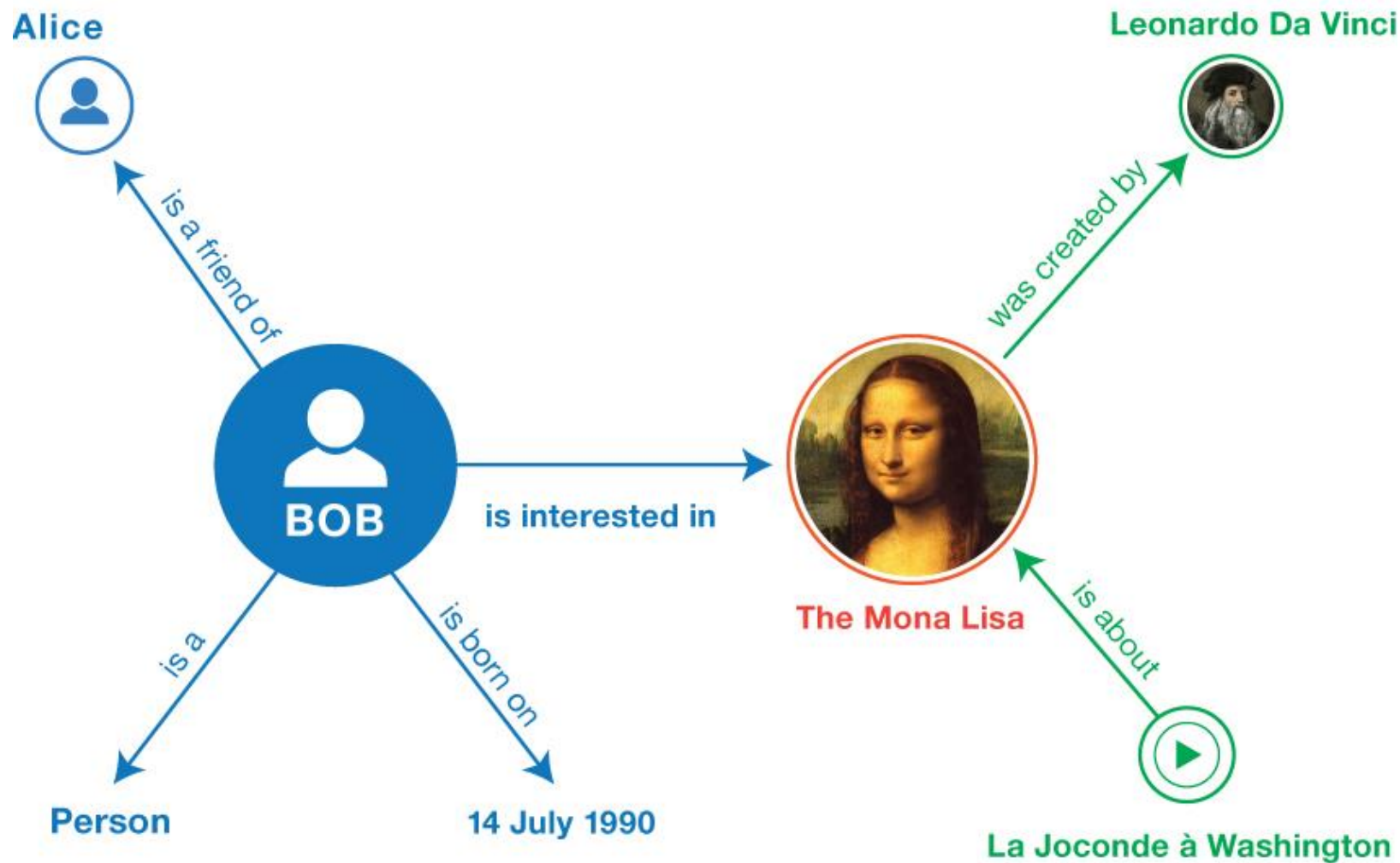
2. SPARQL (Simple Protocol And RDF Query Language)

Query Language



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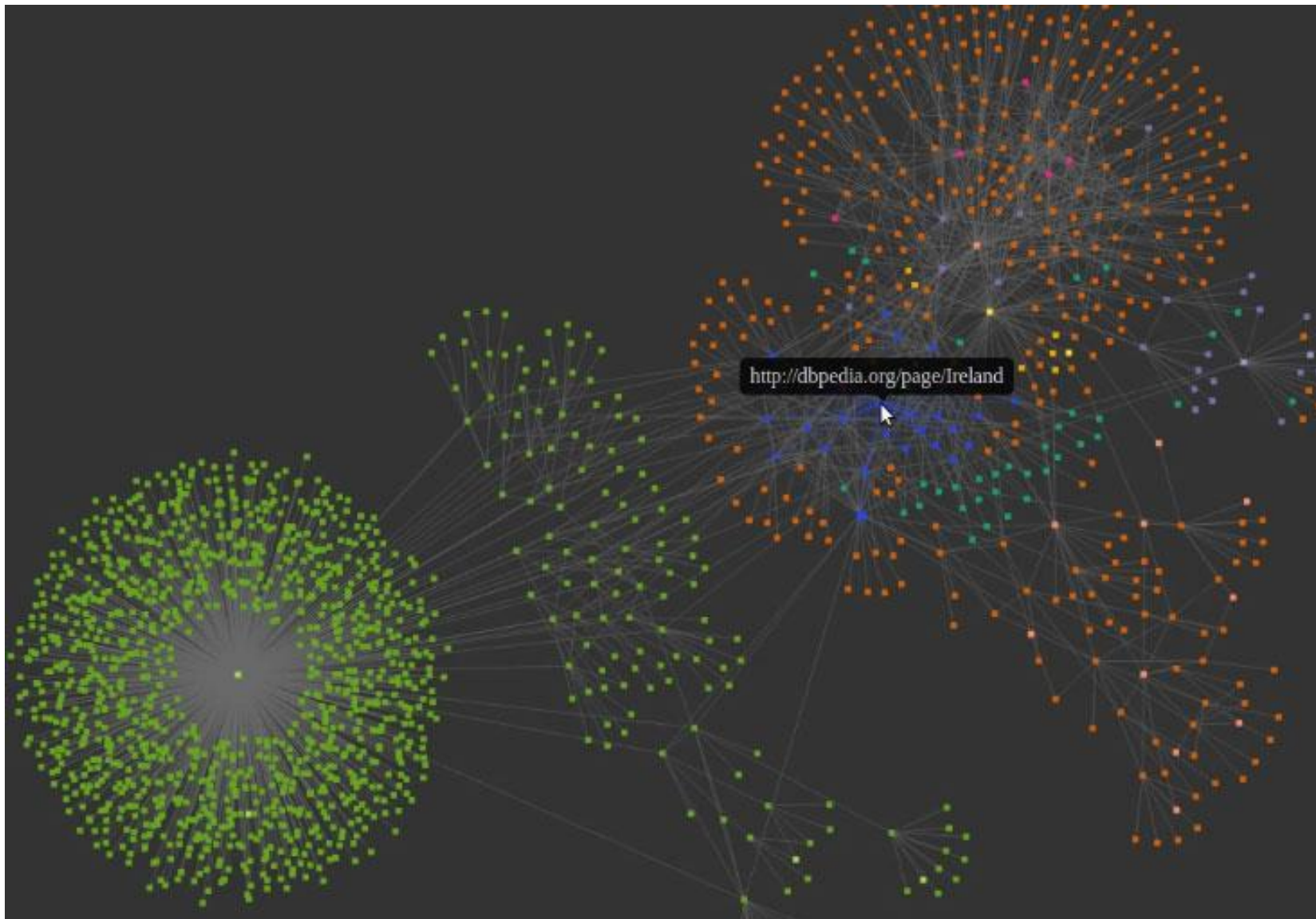
Linked Data..., triples in knowledge graphs





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Linked Data..., 'data clouds'



Paradigm shift

Chains, networks, clouds of Linked data, which are all **knowledge graphs** (don't think in terms of tables and columns anymore)

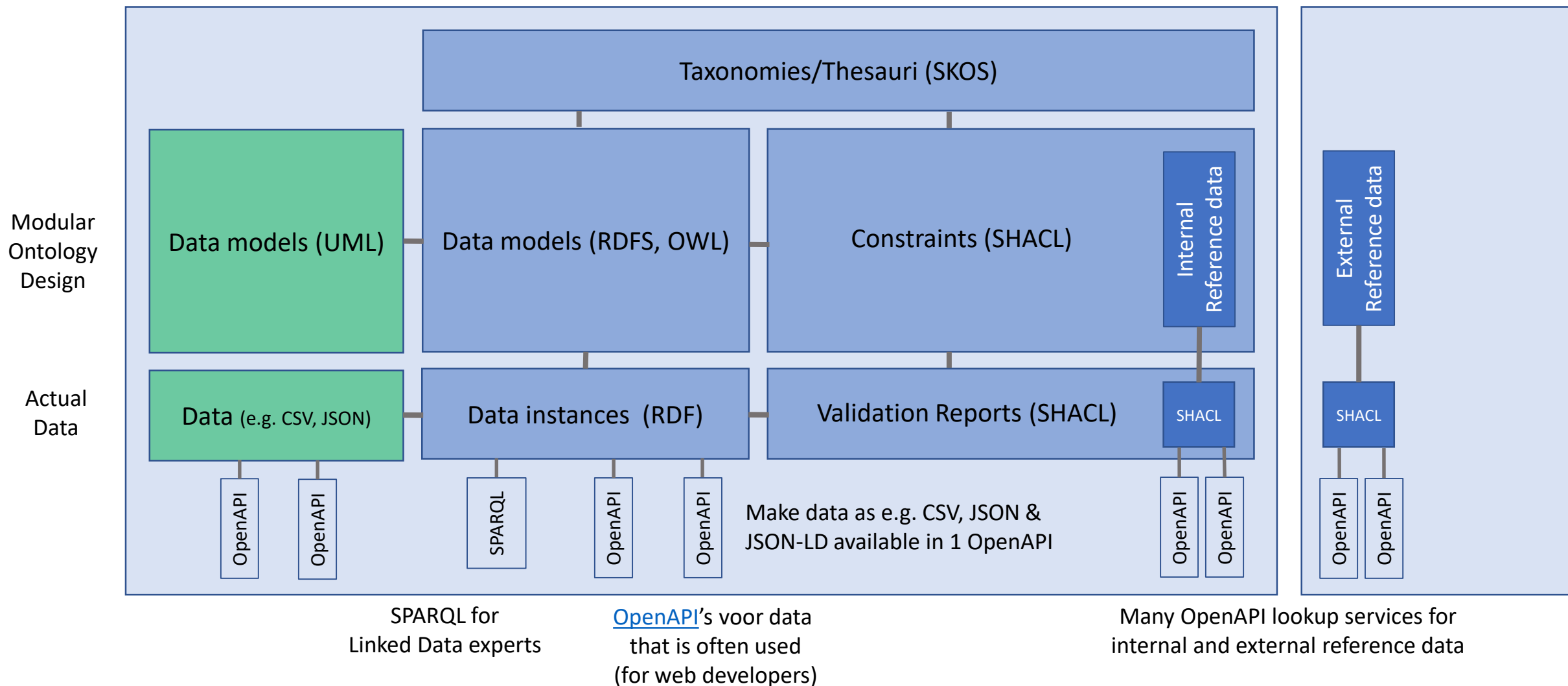
Every data element on the web is accessible and connectable via a **URI**



Linked Data..., W3C standards & API's vision

Context 1

Context 2, 3, 4, etc.





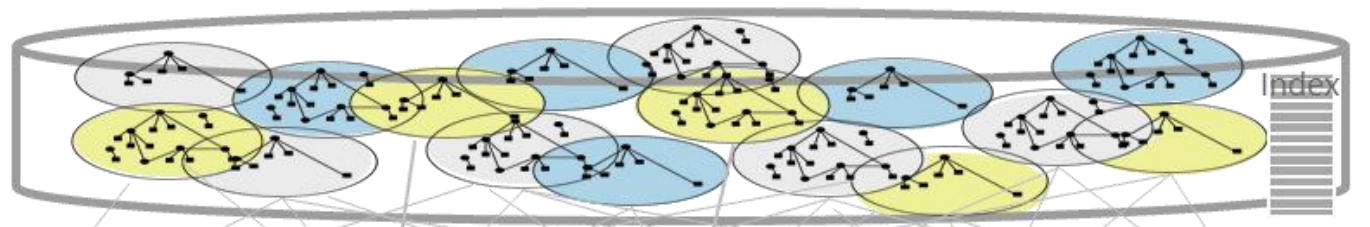
Platform Linked
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Linked Data..., data harmonization !!

Enterprise-wide, Patient-centric, longitudinal Record System



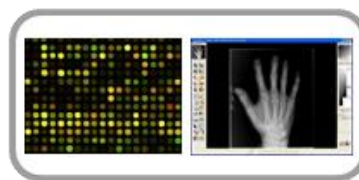
Domain Ontologies
(business metadata +
Ontologies)



Data Servers



Data Sources / Data Types



Medical Devices



Lab Information
Systems



Subscription Services

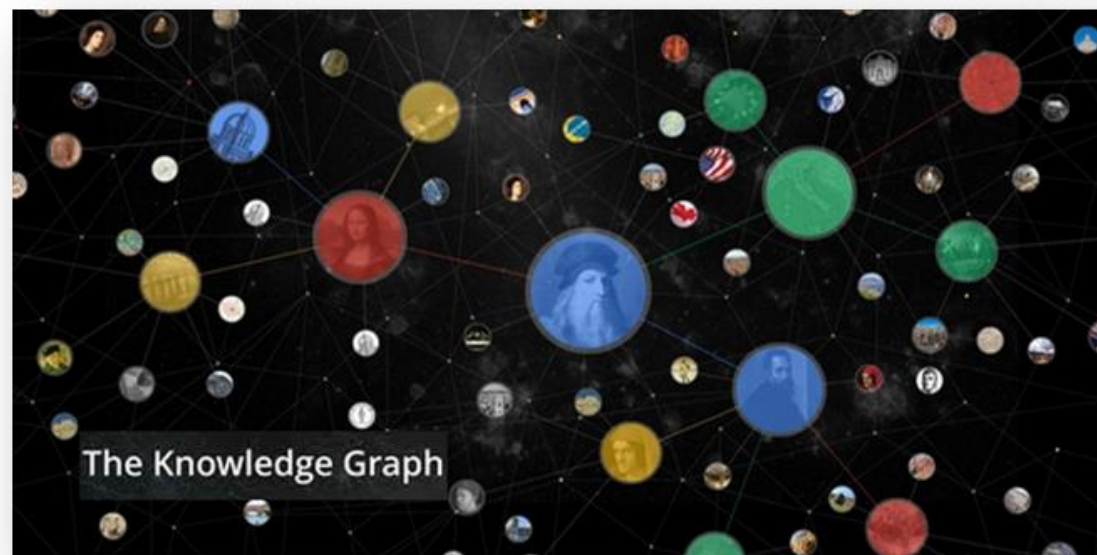
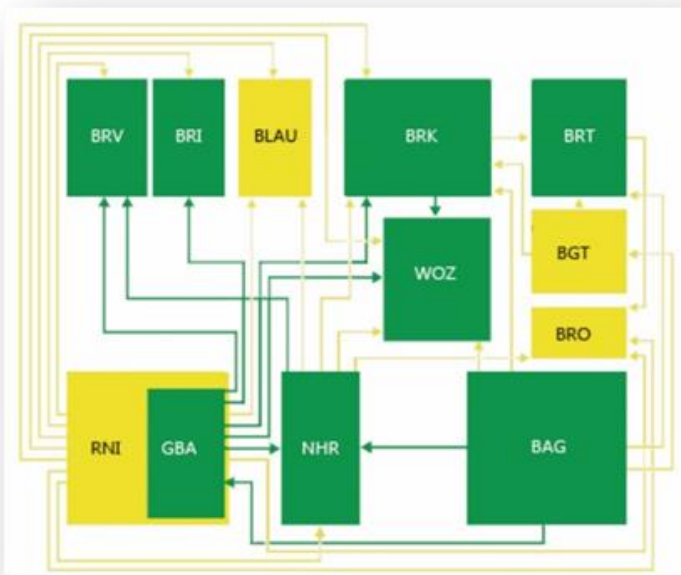


Legacy Patient Records



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Linked Data..., sharing as a valuable asset



Data silo's



Source: [Why Linked Data @Kadaster](#)



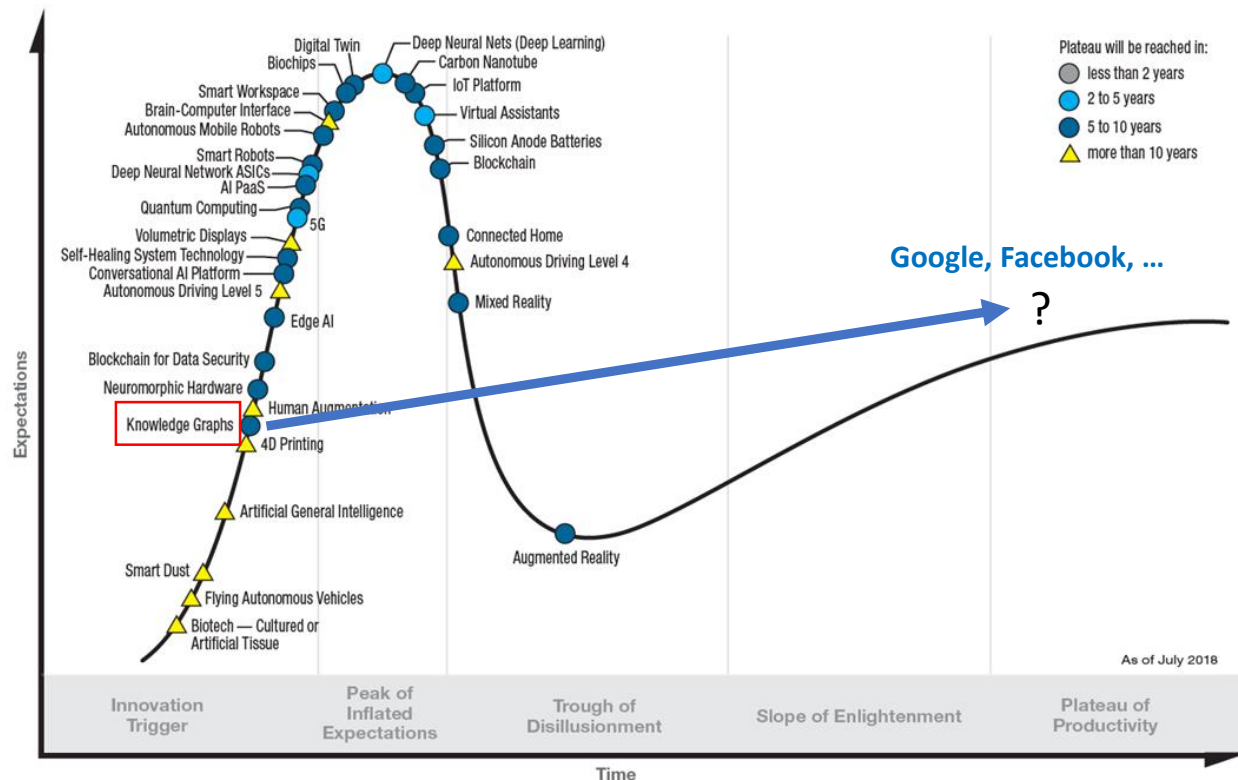
**Connected
Data sources**



Platform Linked
Data Nederland

Trend..., Knowledge Graphs are now in the Gartner Hype Cycle

Hype Cycle for Emerging Technologies, 2018



gartner.com/SmarterWithGartner

Source: Gartner (August 2018)
© 2018 Gartner, Inc. and/or its affiliates. All rights reserved.

Gartner



Frank van Harmelen

@FrankVanHarmeLe

Following

Gartner is reinventing history: apparently, Knowledge Graphs are at the *start* of their hype curve (just before AI, and well behind Quantum Computing!). I double checked: yes, the post is from August 2018.... #hilarious



5 Trends Emerge in the Gartner Hype Cycle for Emerging T...

Widespread artificial intelligence, biohacking, new platforms and immersive experiences dominate this year's Gartner Hype Cycle.
gartner.com

3:55 PM - 2 Sep 2018

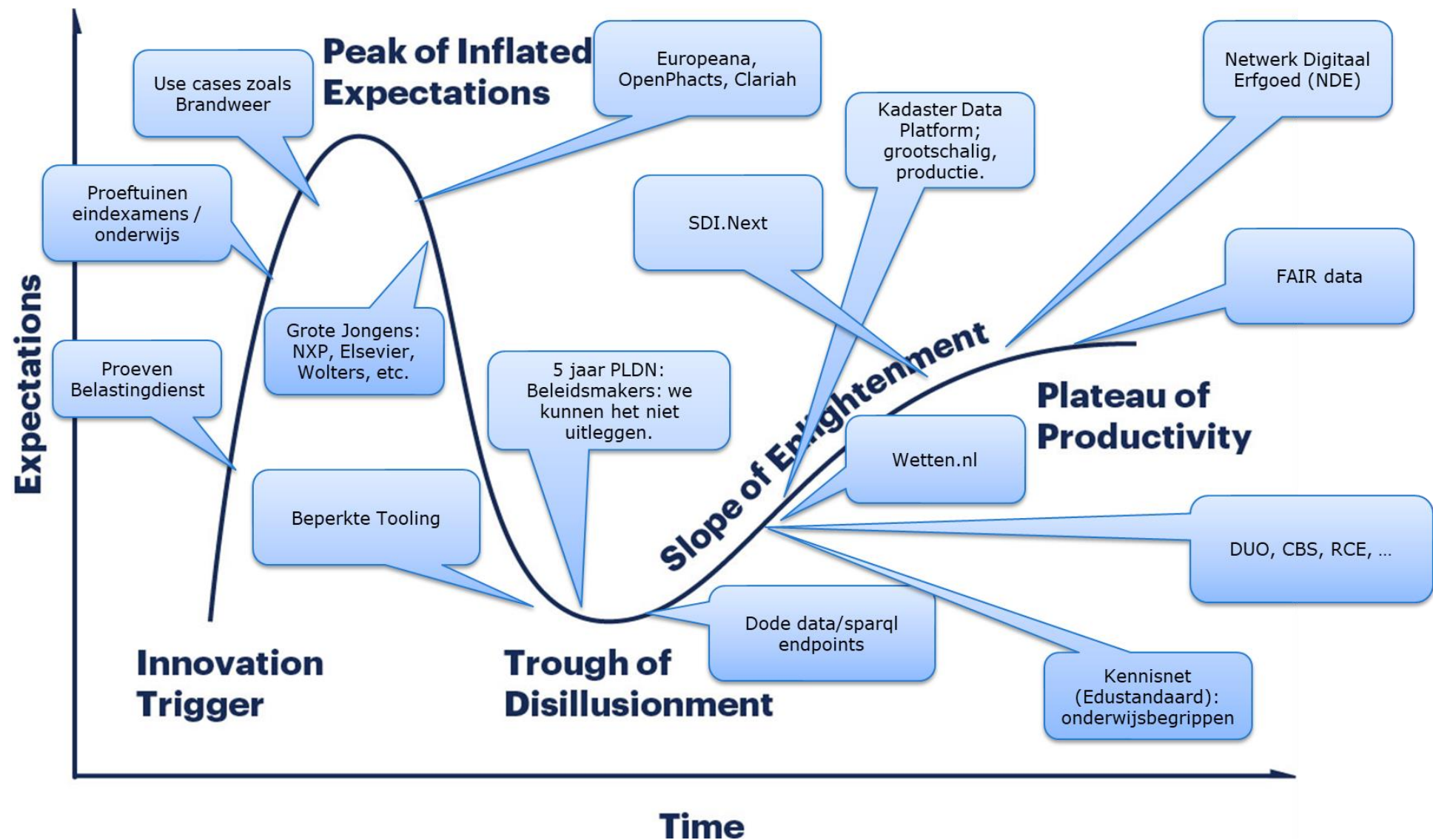
25 Retweets 52 Likes





Platform Linked
Data Nederland

Dutch Linked Data projects mapped onto the Gartner Hype Cycle





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Trend..., use semantics and linked data to make better AI-applications

The New York Times

Opinion

Artificial Intelligence Hits the Barrier of Meaning

Machine learning algorithms don't yet understand things the way humans do — with sometimes disastrous consequences.

By Melanie Mitchell

Ms. Mitchell is Professor of Computer Science at Portland State University.

Nov. 5, 2018



... use linked data to improve the results of Machine Learning algorithms !



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Trend..., linked data and blockchain are complementary technologies

Medium | Blockchain

MEMBER FEATURE STORY

Blockchain Is a Semantic Wasteland

Why haven't we abandoned it?



Nic Carter **Following**

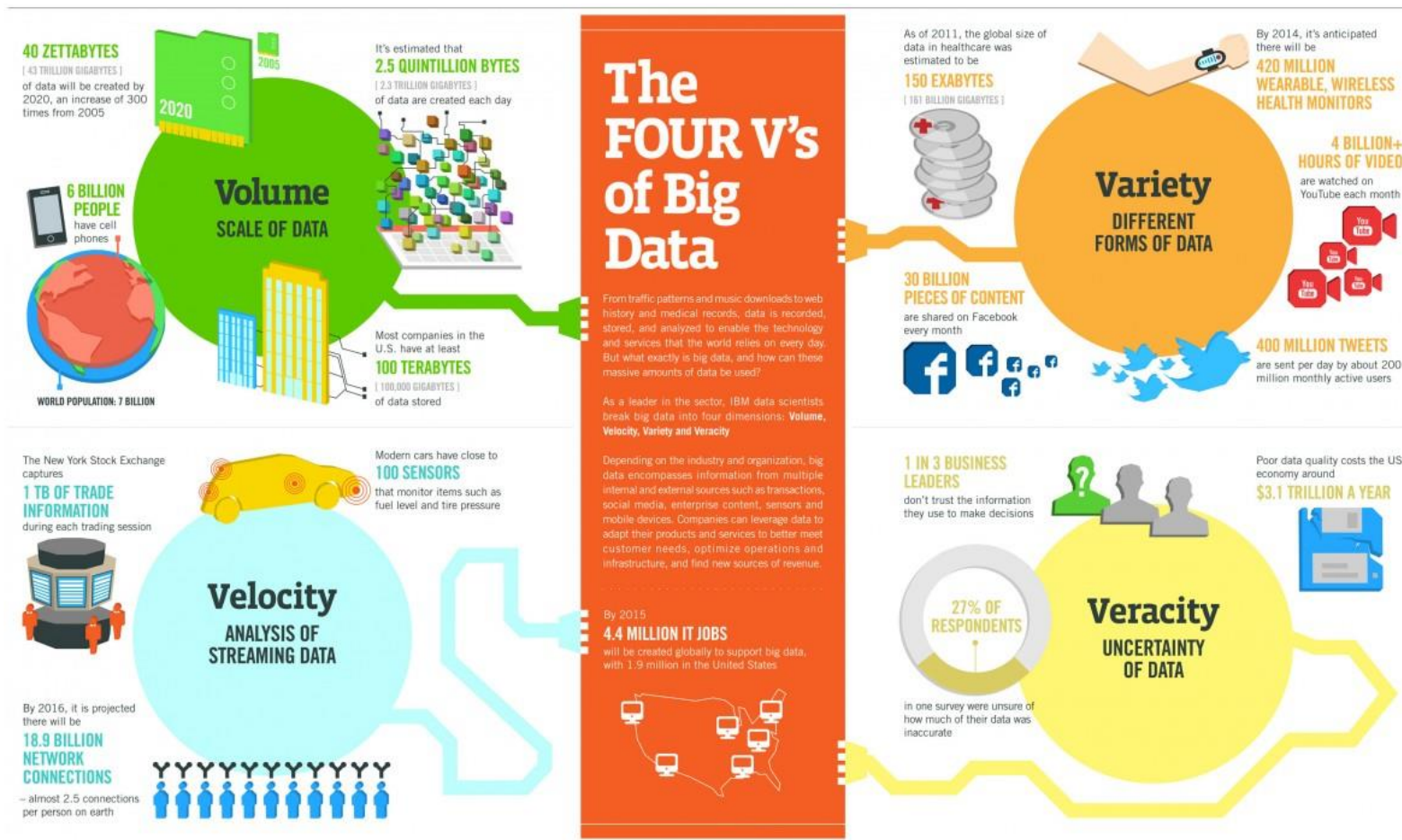
Oct 5 · 11 min read ★

... use linked data to improve findability and traceability of blockchain data !



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Trend..., linked data can deal with variety of data within big data environments



Sources: McKinsey Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPTec, QAS

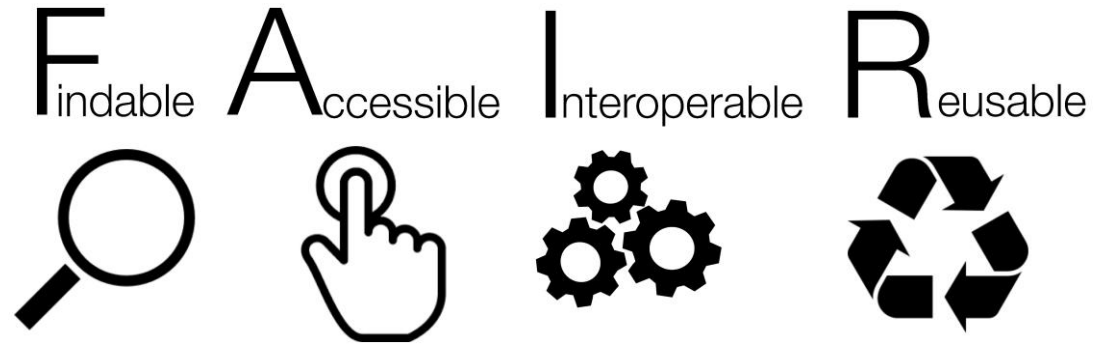
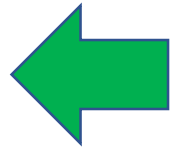
IBM

... use linked data to connect different forms of data in a uniform way !

Trend..., FAIR data principles en Go FAIR have similar ambitions as linked data

Principles to make data:

- **F**indable
- **A**ccessible
- **I**nteroperable
- **R**e-usable



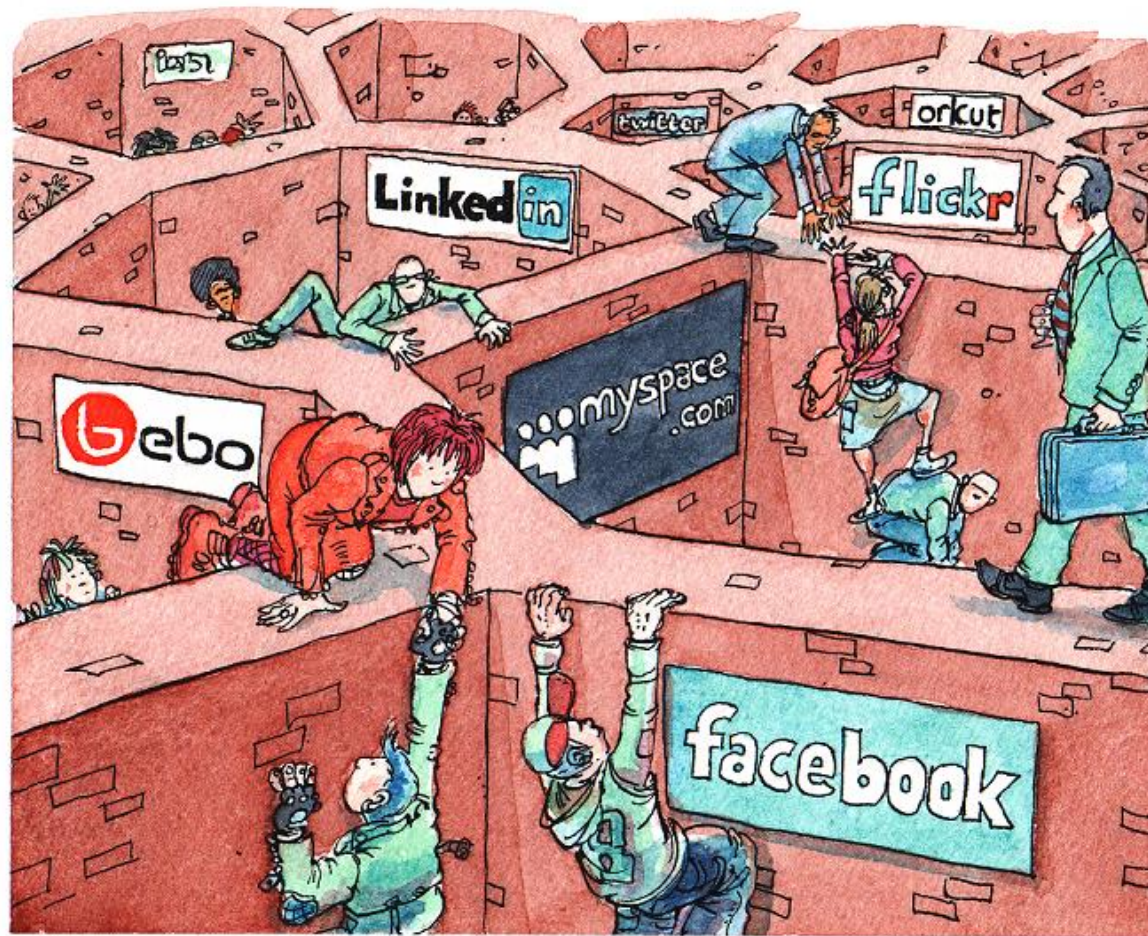
<https://www.go-fair.org/fair-principles/>

... use linked data to prevent us from working with unnecessary data copies !



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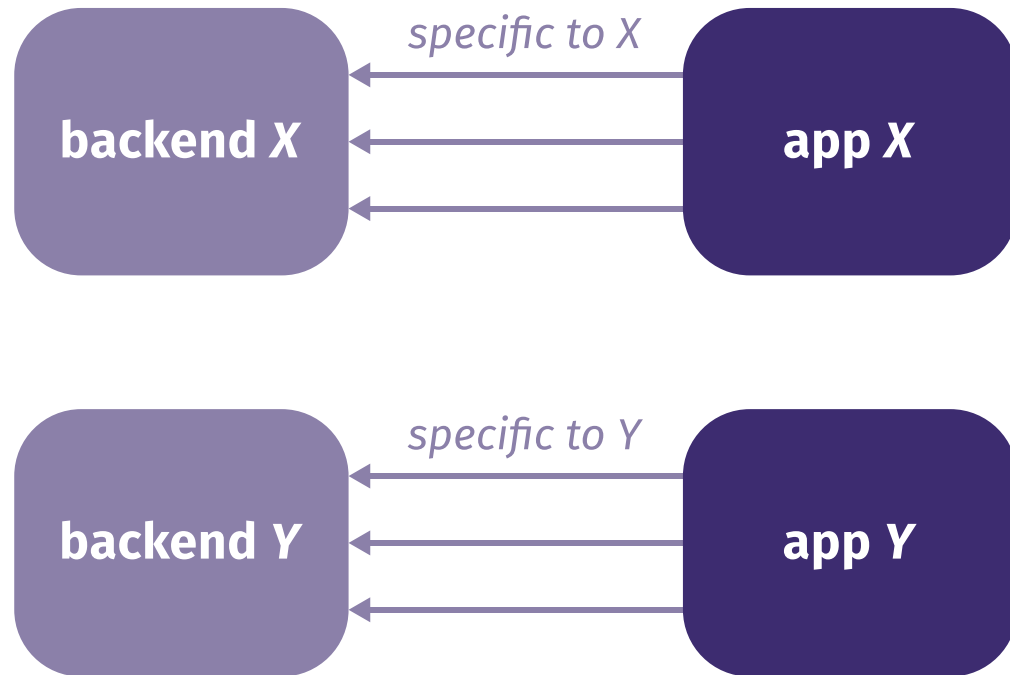
Negative trend..., undesirable **data lock-in** of personal data at social media platforms



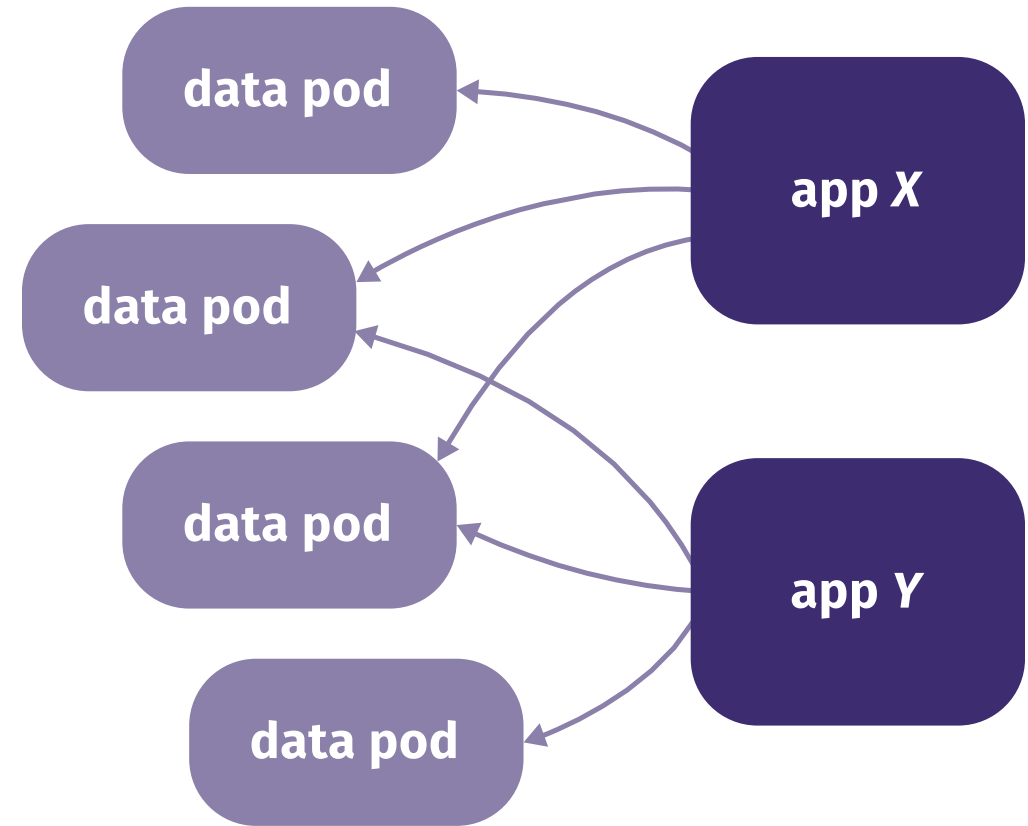
... **'walled gardens' (data silo's)**, no re-use, you have to copy data between platforms !!

Positive trend..., be in control yourself over your personal data (e.g. via **Solid PODS** and **apps**)

centralized: single app & back-end



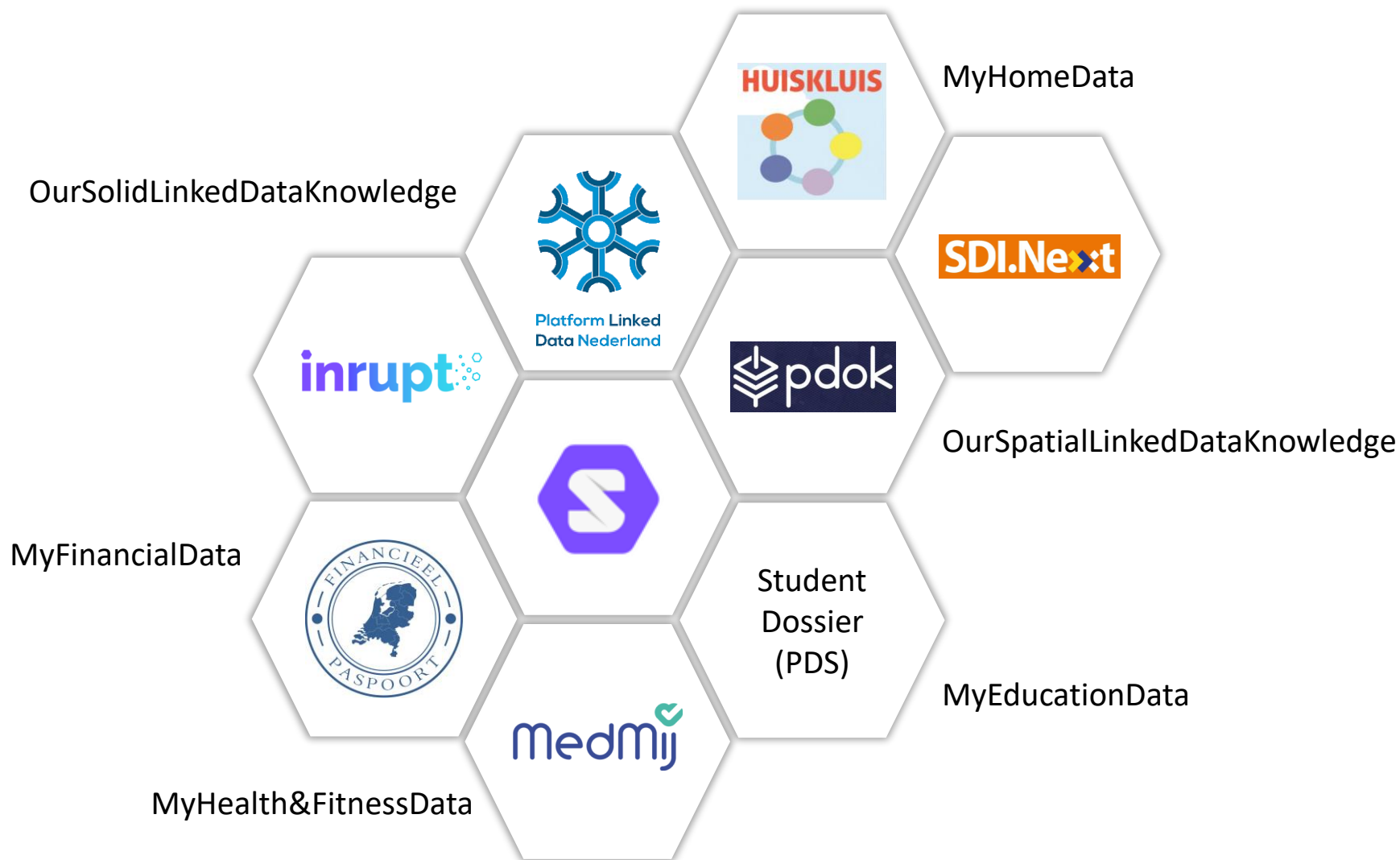
decentralized: multiple apps & back-ends





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Vision..., **interlink** data and knowledge from different communities in a uniform way





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Roadmap..., linked data potential !

Future outlook:

- **Global access to knowledge**
- **Linked data as the 'glue'**
- **One unifying data format**
- **Bridging the barriers across heterogeneous data environments**
- **Facilitating smart collaboration**





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Roadmap..., business value of data

The
Economist



... engage SME's more to develop innovative valuable new data-solutions !



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Roadmap..., facilitated by e.g.

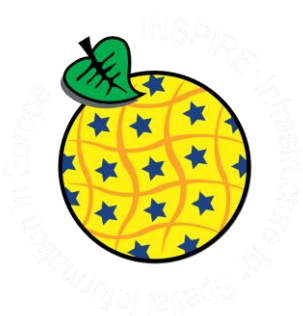


INFORMATIE
VLAANDEREN

joinup



inrupt



SDI.Next

Platform Linked
Data Nederland

KB } nationale
bibliotheek



SEMANTiCS
Karlsruhe 2019



... and many other international, European and Dutch organizations !



Platform Linked
Data Nederland

Platform Linked Data Netherlands (PLDN)

www.platformlinkeddata.nl

Innovatie door betekenisvol verbinden

Platform Linked Data Nederland

platform linked data experts doe mee

Wat zoekt u?

Vind Linked Data

Vind Experts

Aan de slag

Experimenteer

Laatste nieuws

Sneak preview - Play-a-LOD linked data spel
5 juni 2019

€ 200,- korting voor PLDN community members op de driedaagse leergang Datagedreven werken binnen de overheid op 5, 12 en 17 april in Den Haag
27 januari 2019

Nieuwe PLDN Sponsoring Pakketten - Word Sponsor van PLDN
31 december 2018

Activiteitenkalender

Solid The Hague Kick-Off
28 juni 2019

Innovative Data Integration Event
20 juni 2019

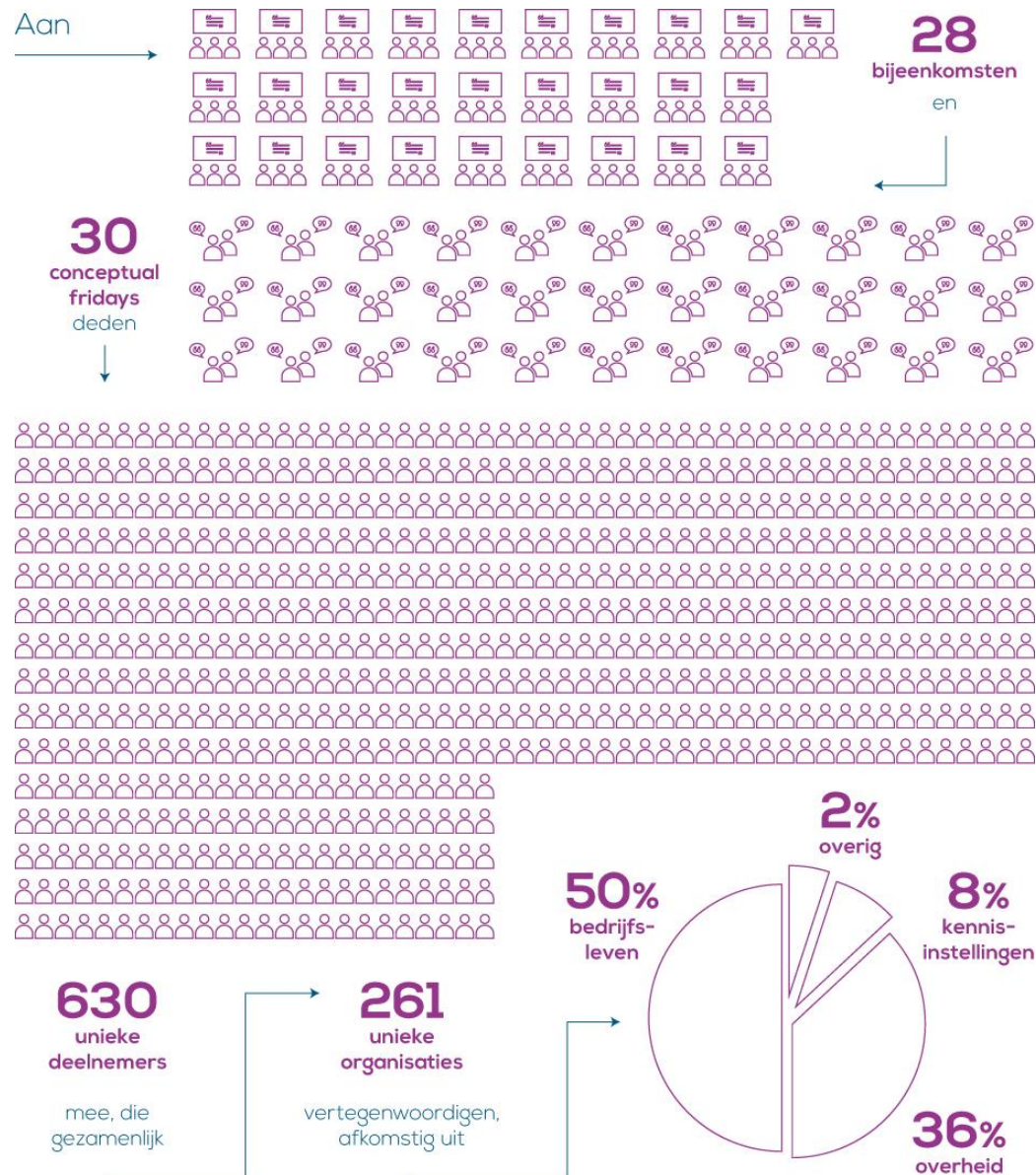
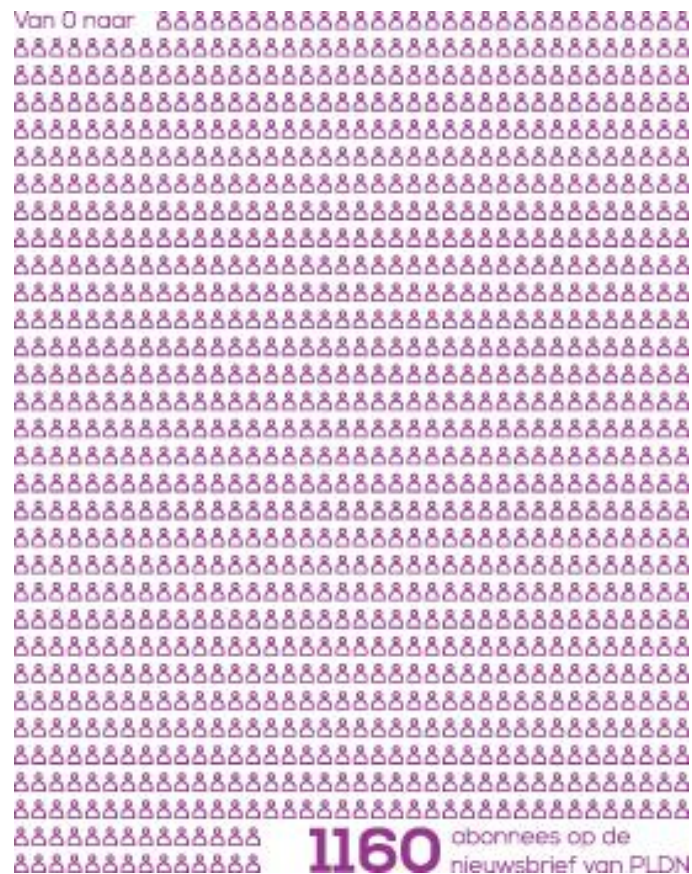
PLDN-Solid Kick-Off
9 april 2019

SDI.Next: Linked Spatial Data in Europe
12 maart 2019



Platform Linked
Data Nederland

5 years PLDN..., some figures





Platform Linked
Data Nederland

Facilitated by..., PLDN sponsors



Platform voor de
InformatieSamenleving



Forum Standaardisatie



Kennisnet



Rijksdienst voor het Cultureel Erfgoed
Ministerie van Onderwijs, Cultuur en
Wetenschap



BEELD EN GELUID



Contact us if you would like to sponsor the PLDN-activities
(see our [sponsorship packages-page](#) for the sponsoring options)



Platform Linked
Data Nederland

Get involved..., as participant/coordinator/...

As participant/coordinator

- Events
- Working groups
- Publications



As sponsor

- Gold sponsor
- Silver sponsor
- Bronze sponsor



In the steering group





Platform Linked
Data Nederland

Get involved..., PLDN events

- **31 jan:** [Smart Data Practices seminar](#) (Waternet, Amsterdam)
- **12 mar:** [SDI.Next: Linked Spatial Data](#) (RCE, Amersfoort)
- **9 apr:** [PLDN-Solid Kick-Off](#) (SURF, Utrecht)
- **20 jun:** [Innovative Data Integration event](#) (Amsterdome, Amsterdam)
 - Information boot with our publications
 - PLDN-track /w Smartlogic, Movares & Sensing Clues
- **28 jun:** [Solid The Hague](#) (The Hague Tech, The Hague)
- **14 nov:** [ECP Jaarcongres](#) (Fokker Terminal, The Hague)
- **29-30 nov:** [HackaLOD 2019](#) (Radio Kootwijk, Apeldoorn)



Platform Linked
Data Nederland

Get involved..., HackaLOD 2019?

hackaLOD



November 29-30th
Radio Kootwijk

Contact us via platformlinkeddata.nl@gmail.com
if you want to participate in a Solid HackaLOD team



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Get involved..., PLDN working groups

1. [Geo data working group](#) (Linda van den Brink)
2. [Federation of catalogs working group](#) (Arjen Santema/Marco Brattinga/Hans Overbeek)
3. [Reference data working group](#) (Jan Campschroer)
4. [Cultural Heritage working group](#) (Henk Schaap)
5. [Linked Data Game working group](#) (Erwin Folmer/Marcia van Oploo/Gordon Constant)
6. [Linked Beer working group](#) (Dimitri van Hees)
7. [Solid work sessions](#) (Pieter van Everdingen/Pano Maria)
8. ...

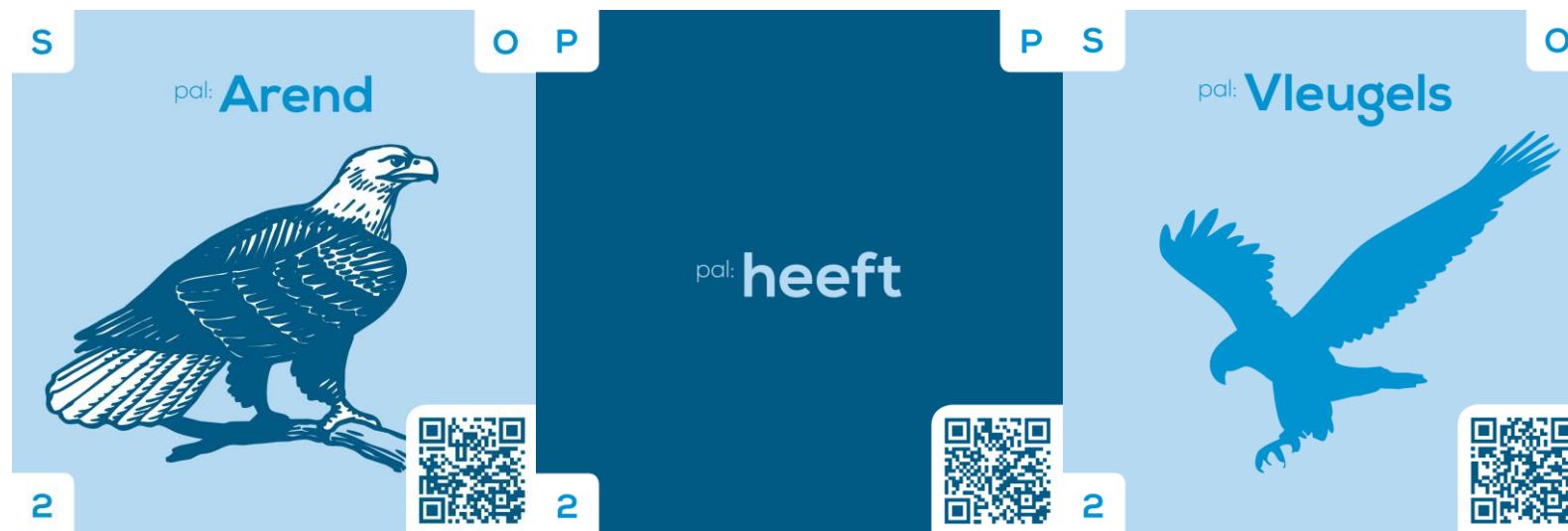
**Contact us if you would like to start a new working group
(see the [last slide](#) for our contact details)**





Platform Linked
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NEWS - Play-a-LOD Animals game !!

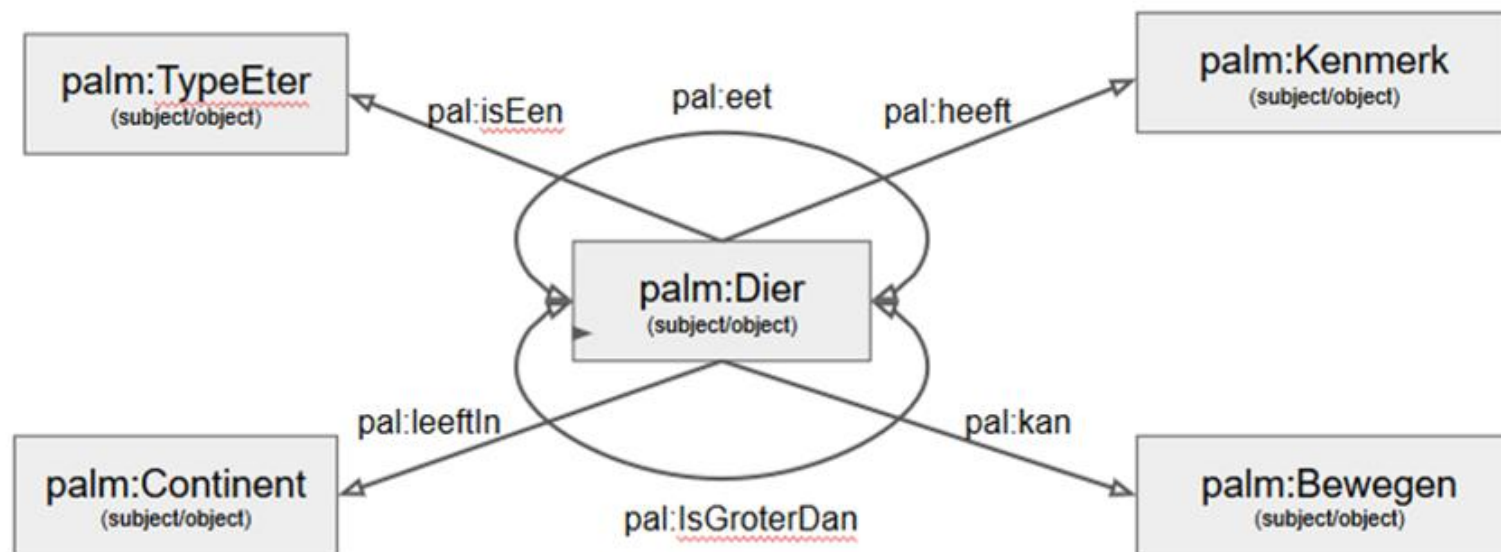


Learn about Linked Open Data in a playful way

Sample triple: *Eagle (subject) – has (predicate) – Wings (object) (6 points)*



Play-a-LOD Animals information model



Information model for Play-a-LOD animals Linked Data game

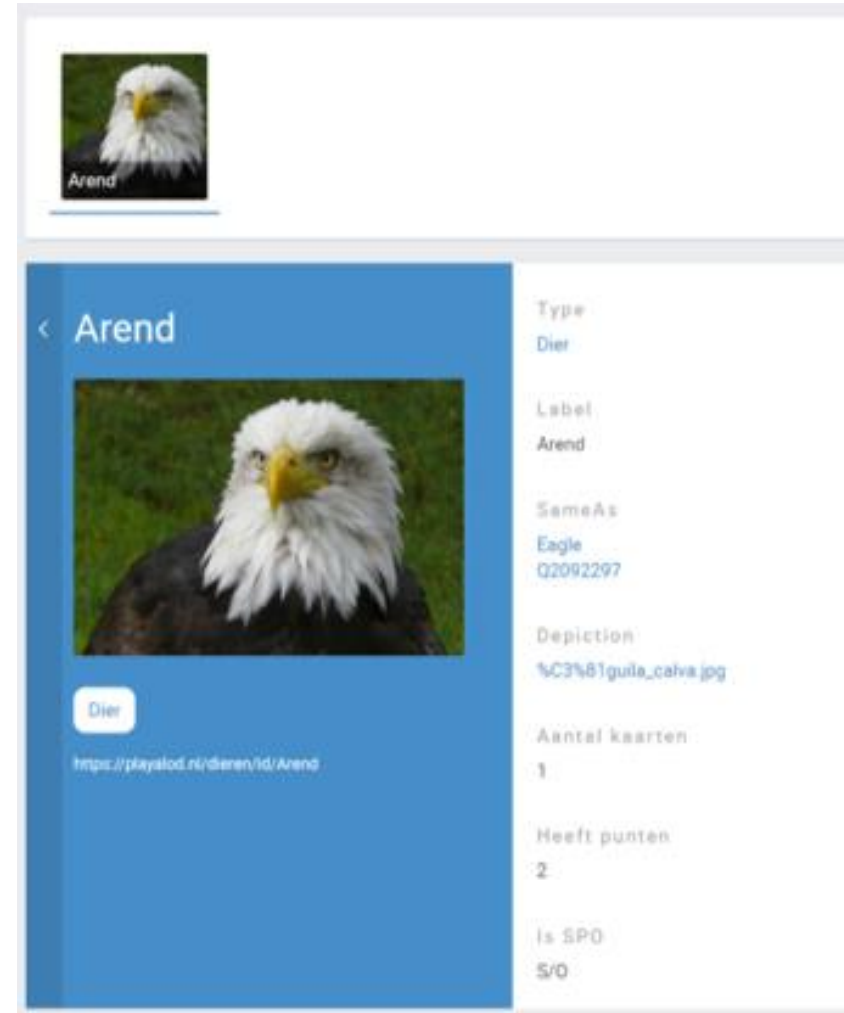


Platform Linked
Data Nederland

Play-a-LOD supporting web sites



The screenshot shows the Playalod website. At the top is the Platform Linked Data Nederland logo and a search bar. Below the logo is a navigation bar with links: platform, linked data, exports, and doe mee. The main content area is titled 'Playalod' and 'Waarom een spel over Linked Data?'. It contains a paragraph explaining the concept of Linked Data and a diagram showing a progression from PDF to LOD. The diagram starts with a PDF icon, followed by a CSV icon, then a LOD icon, and finally a star icon. A yellow arrow points from the PDF icon to the LOD icon. Below the diagram is a source link: Bron: <https://data.nl/data.nl/>. At the bottom, there is a paragraph explaining the importance of Linked Data and a link to the Playalod website.



The screenshot shows a card for 'Arend' on the Playalod website. The card has a blue header with the name 'Arend' and a back arrow. Below the header is a large image of a bald eagle. Under the image is a label 'Dier' and a URL: <https://playalod.nl/dieren/id/Arend>. To the right of the image is a sidebar with metadata:

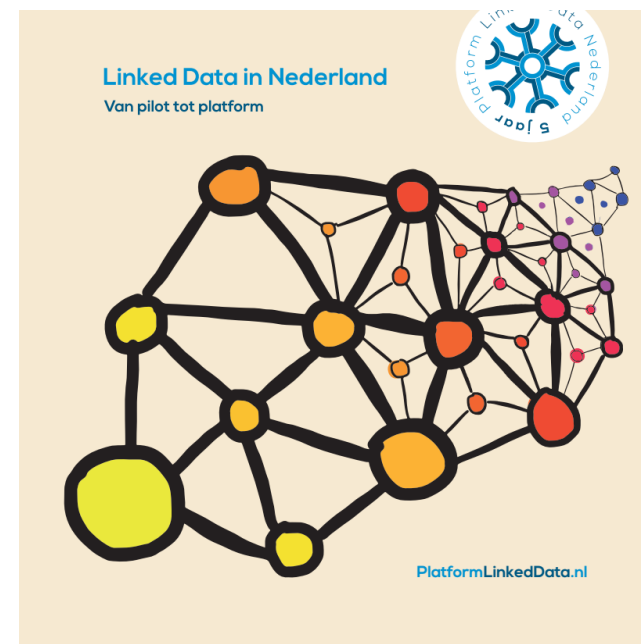
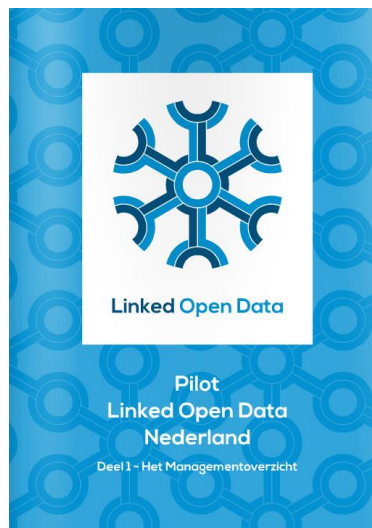
- Type: Dier
- Label: Arend
- SameAs: Eagle Q2092297
- Depiction: %C3%81gula_caiva.jpg
- Aantal kaarten: 1
- Heeft punten: 2
- Is SP0: S/O

See also: www.playalod.nl and <https://data.pldn.nl/playalod/dieren/>



Platform Linked
Data Nederland

Start with..., PLDN publications



<http://www.pilod.nl/wiki/Resultaten>



Platform Linked
Data Nederland

Start with,...online courses

- **Inria** Introduction to a Web of Linked Data:
<https://www.fun-mooc.fr/courses/course-v1:inria+41013+session03/about?platform=hootsuite>
- **OpenHPI** Information Services Engineering:
<https://open.hpi.de/courses/semanticweb2017>
- **EUCLID** EdUcational Curriculum for the usage of LInked Data:
<http://euclid-project.eu/index.html>
- Courses of local consultancy companies



Platform Linked
Data Nederland

Start with..., online course (Inria)

<https://www.fun-mooc.fr/courses/course-v1:inria+41013+session03/about?platform=hootsuite>

Accueil • Tous les cours • Introduction to a Web of Linked Data

Introduction to a Web of Linked Data

Les thématiques

Informatique

Numérique, technologie

Sciences pour l'ingénieur

About this course

Among its many evolutions, the Web became a way to exchange data between applications. Everyday we consume and produce these data through a growing variety of applications running on a growing variety of devices. This major evolution of the Web has applications in all domains of activity.

This MOOC introduces the Linked Data standards and principles that provide the foundation of the Semantic web. We divided this introduction into four parts:

- the fundamental principles of linked data on the Web
- the RDF recommendation that provides a standard data model and syntaxes to publish and link data on the Web
- an overview of the SPARQL query language that allows us to access data sources on the Web
- the standards supporting the exchange and integration of RDF data with other formats and data sources (R2RML, CSVW, JSON-LD, RDFa, GRDDL, LDP).

Each week alternates short videos and quizzes, as well as supplementary resources, to gradually progress through the different principles and standards.

Requirements

Participants need to be acquainted with basic Web notions (e.g. browser) and be able to install software on their machine.

Evaluation

Students' work in the course is assessed through quizzes between each video and exercises at the end of every week. A certificate will be issued by FUN, confirming successful completion of the Mooc.

Course Syllabus

Week 1	Principles of a Web of Linked Data
Week 2	The RDF Data Model
Week 3	SPARQL Query Language
Week 4	Integration with Other Data Formats and Sources



Les inscriptions sont closes



Fin d'inscription
Inscription close

Effort estimé
3 h/semaine

Début du Cours
25 sep 2017

Langue
Anglais


Fin du cours
04 déc 2017



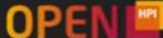



Platform Linked
Data Nederland

Start with..., online course (OpenHPI)

<https://open.hpi.de/courses/semanticweb2017>

 Hasso-Plattner-Institut







Design IT. Create Knowledge.

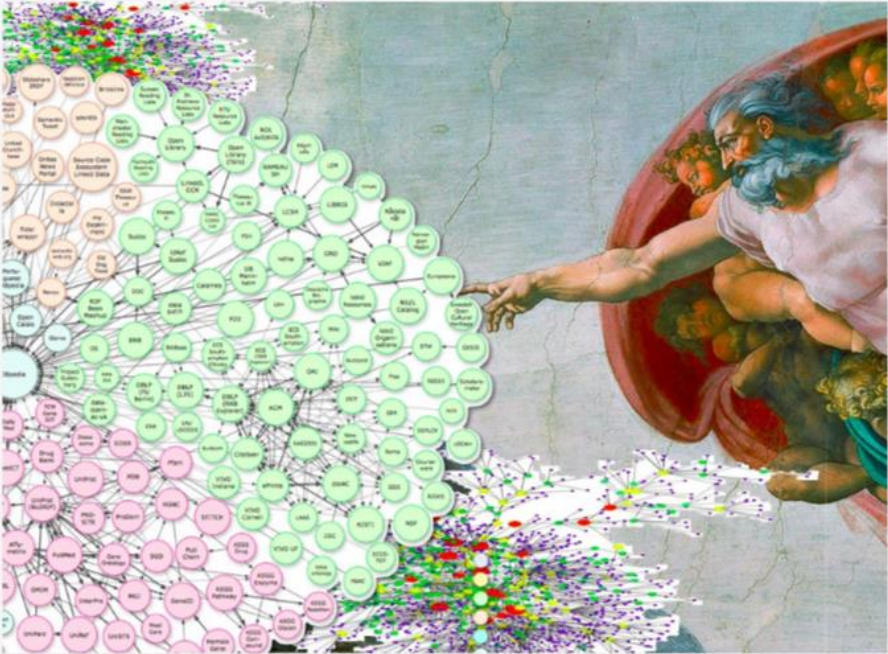
 About openHPI Courses News  English  Log in 


Information Service Engineering


Prof. Dr. Harald Sack, Dr. Maria Koutraki


Course has not yet started


 Learnings  Discussions  Progress  Collab Space  Course details  Announcements




 share


 tweet


 share


 share

 mail

The information available today exceeds all limits. Access to this abundance of data is only possible via search engines and sophisticated information processing applications. To enable the transition from raw data to well-structured knowledge, technologies such as natural language processing, information retrieval, and data and knowledge mining must be applied. In this MOOC, you will learn the fundamentals of natural language processing as well as the basics of Linked Data-based knowledge representation and machine learning to enable the transition from unstructured data to machine processable knowledge.

 April 16, 2018 - June 11, 2018

 Language: English





Platform Linked
Data Nederland

Start with..., online course (EUCLID)

<http://euclid-project.eu/>



HOME ABOUT RESOURCES EVENTS CONTACT

WELCOME TO EUCLID

EUCLID is a European project facilitating professional training for data practitioners, who aim to use Linked Data in their daily work. EUCLID delivers a curriculum implemented as a combination of living learning materials and activities (eBook series, webinars, face-to-face training), validated by the user community through continuous feedback. [Read more about the project.](#)



Download the EUCLID iBook

Each chapter of this book is targeting a different crucial task related to Linked Data. You will have the opportunity to study in depth various aspects of the usage of Linked Data, watch webinar movies and screencasts, as well as test your knowledge via quizzes and exercises.



If you don't have access to the Apple iBooks Store in your country, you can download it from [here](#) (size: 570MB).

Study our modules

MODULE 1

MODULE 2

MODULE 3

MODULE 4

MODULE 5

MODULE 6

LAST TWEETS

RT @jahendler: #ageofdata - today's trivia - Aaron Swartz (@aaronsw) had an article on musicbrainz in IEEE Intel Systems ca.'02 - <http://t...>

RT @avilarenata: What is the @webwewant initiative? A visual summary of my presentation at #civicmedia14 @ MIT by @willowbl00 <3 <http://t.c...>

RT @NeelieKroesEU: My speech to @OKFestival is now "open" for comments! <http://t.co/ZEEoWpbqij> #okfest14 #copyright #opendigitalscience #op...

RT @RohanMalik_EY: #bigdata and #opendata: what's what and why does it matter? | By @JoelGurin <http://t.co/azMH8X30x5> #govdata <http://t.co/...>

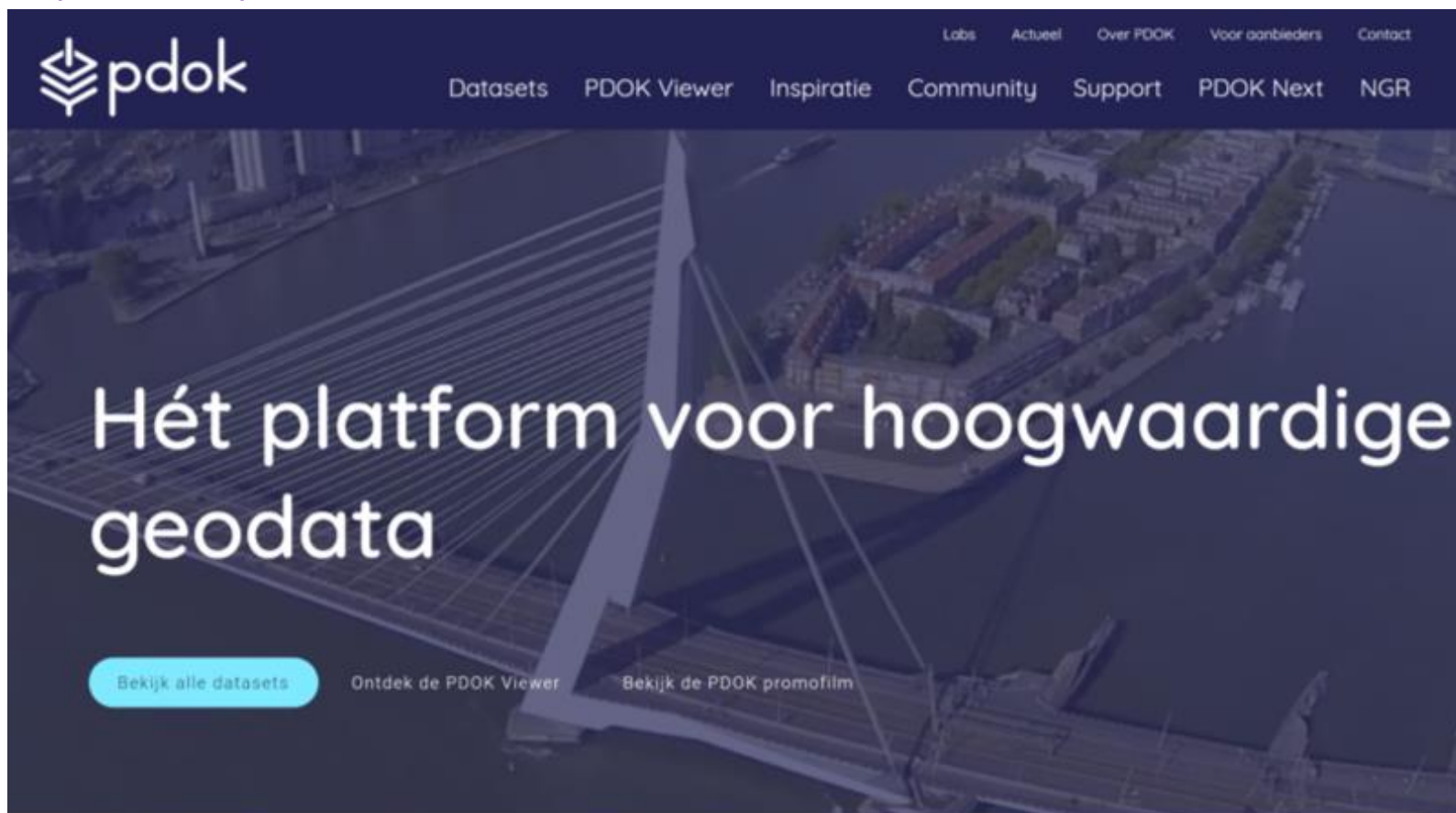
RT @realhamed: The EU strategy on the data-driven economy



Platform Linked
Data Nederland

Look also..., PDOK Data Platform

<https://www.pdok.nl/>



Bij PDOK vind je open datasets van de overheid met actuele geo-informatie. Deze datasets zijn benaderbaar via geo webservices, RESTful API's en beschikbaar als downloads en linked data. Daarnaast vind je hier inspirerende cases over de mogelijkheden van deze geo datasets. Meer info over PDOK.

158
hoogwaardige
datasets



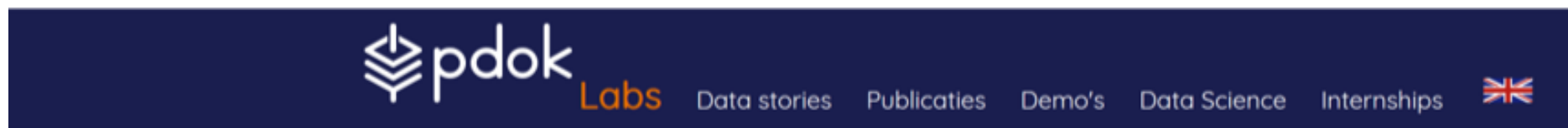
29 miljoen
data calls
per dag



Platform Linked
Data Nederland

Look also..., PDOK Data Labs

<https://data.labs.pdok.nl/>



PDOK Labs

BETA

 [Bekijk op GitHub](#)

Bekijk onze [datasets](#)
en [SPARQL service!](#)

Laatste
wijzigingen:

[Apps/terugmeldWDC2](#)
[Stories/erfgoed](#)
[Apps/terugmeldWDC](#)
[Stories/OpenELS](#)
[Apps](#)
[Internships](#)
[Publications/BAG-](#)
[to-the-Future](#)

PDOK Labs!

Op de Labs omgeving experimenteren we met datasets, opslag- en ontsluitingsmechanismen en applicaties.

Data Stories

Check onze [Data Stories](#)

SPARQL

We hebben een eigen sparql endpoint. Wil je deze bevragen in de browser, dan hebben we [hier een pagina](#) waar je het endpoint met YASGUI kan querien. Hier is ook het adres van het endpoint zelf te vinden.

GeoSPARQL

We hosten een apart [geosparql endpoint](#). We hebben hier geen eigen [yasgui](#) sectie voor, maar je kan hier wel het endpointadres aanpassen.

Demonstrators & apps

Bekijk de [visualisatie- en dataverwerkingsapplicaties](#)



Platform Linked
Data Nederland

Innovative Data Integration program

PLDN Introduction

Time	
12:00 - 12:30	Platform Linked Data Netherlands, Innovation via Meaningful Connections - Pieter van Everdingen (PLDN)

12:30 - 14:00 - Lunch

Innovative Data Integration Cases

14:00 - 14:30	Delivering Pro-active Healthcare Management with Semantics & Graphs - Paul Gunstone (Smartlogic)
14:30 - 15:00	Controlling The Build & Maintenance Chain with Connected Infrastructure Data - Wouter Engelen (Movares) (in Dutch)
15:00 - 15:30	Agile Data Modeling & Integration within a Wildlife Intelligence Platform - Jan Kees Schakel (Sensing Clues)



Platform Linked
Data Nederland

PLDN communication channels

BIG DATA
VALUE CENTER
OPEN INNOVATION CENTER

ECP

Platform voor de
InformatieSamenleving

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